INFORMATION ONLY

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE EMD OPERATING PROCEDURES MANUAL VOLUME III: GEOTECHNICAL	Manual No.: 5-21000-OPS-GT Procedure No.: Table of Contents, Rev 61 LSB Page: 1 of 3 Effective Date: 12/22/94 Organization: Environmental Management

THIS IS ONE VOLUME OF A SIX VOLUME SET WHICH INCLUDES:

VOLUME I: FIELD OPERATIONS (FO)
VOLUME II: GROUNDWATER (GW)
VOLUME III: GEOTECHNICAL (GT)
VOLUME IV: SURFACE WATER (SW)
VOLUME V: ECOLOGY (EE)
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Procedure No.	Title	Rev. No.	Effective Date
GT.01	Logging Alluvial and Bedrock Material	2	05/12/92
94-DMR-001007	LIMITED SCOPE - Section GT.01 Text and Form GT.1A Modification	2	06/01/94
GT.02	Drilling and Sampling Using Hollow Stem Auger Techniques	2	05/12/92
93-DMR-000955	Form GT.2A Modification	2	01/10/94
93-DMR-000960	QC Sample Collection Modification	2	01/10/94
94-DMR-000382	Approval Process and Sampling Collection Modification	2	03/28/94
94-DMR-000405	Sample Liner Taping Changes	2	03/28/94
94-DMR-000995	LIMITED SCOPE - Section GT.02 Text Modification	2	06/01/94
GT.03	Isolating Bedrock from Alluvium with Grouted Surface Casing	2	05/12/92
93-DMR-000956	Form GT.3A Modification	2	01/10/94
94-DMR-000418	Advanced Notification to the State of Colorado	2	04/22/94
GT.04	Rotary Drilling and Rock Coring	2	05/12/92
93-DMR-000957	FORM GT.4A Modification	2	01/10/94
94-DMR-000419	Advanced Notification to the State of Colorado	2	04/22/94
94-DMR-000935	Procedure Modification to Allow Sonic Drilling Technique Usage	2	06/01/94
GT.05	Plugging and Abandonment of Boreholes	2	05/12/92
93-DMR-000961	Form GT.5A Modification	2	01/10/94

ADMIN RECORD

DOCUMENT CLASSIFICATION REVIEW WAIVER
PER R.B. HOFFMAN, CLASSIFICATION OFFICE
JUNE 11, 1991

INFORMATION ONLY

DOCUMENT MODIFICATION REQUEST (DMR)

Refer to 1-A01-PPG-001 for Processing Instructions.
Print or Type All Information (Except Signatures)

1. Date: 9/28/94

25. DMR. No. 94-DMR-002349

2. Existing Document Number/Revision: 5-21000-OPS-GT.6, Rev. 2

3. New Document Number or Document Number if it is to be changed with this Revision:

4. Originator's Name/Phone/Page/Location: Carol Bicher /X9100/NA/080

5. Document Title: Monitoring Well and Piezometer Installation

6. Document Type: ☒ Procedure ☐ Other ______

7. Document Modification Type (Check only one): ☐ New ☐ Revision ☒ Intent Change ☐ Nonintent Change ☐ Editorial Correction ☐ Cancellation

8. Item	9. Page	10. Step	11. Proposed Modifications
1	15D		Change 6.4 Well Point Installation to 6.4 Well Point/Mini-Well Installation.
2	15D		Add the following sub-heading below the 2nd Paragraph: 6.4.1 Well Point Installation.
3	16		Add the following sub-heading & text below item # 11: 6.4.2 Mini-well installation 1. Decontaminate the rig & downhole equipment, see SOP FO.3, General Equipment Decontamination for specific details regarding decontamination. 2. Set up the rig to obtain a thrust direction as close to vertical as possible. 3. Advance a Kansas Sampler, hydraulically installing a one-3/8-inch diameter borehole in accordance with SOP GT.2, Drilling (continued)

12. Justification (Reason for Modification, EIO#, TPF, etc.)

Required for Installation of mini wells in OU5 for groundwater investigation. (Limited Scope: OU5)

No training Required

If modification is for a new procedure or a revision, list concurring disciplines in Block 13, and enter N/A in Blocks 14 and 15. If modification is for any type of change or a cancellation, organizations are listed in Block 13, then Concurror prints, and signs in Block 14, and dates in Block 15.

13. Organization	14. Print and Sign (If applicable)	15. Date (If applicable)
OU5	Mark R. Wood	9/29/94
OU567	E.C. Must	9/30/94
OU5	[illegible]	10/10/94
OU5/ERS	M. G. Franchuk	10/10/94
~~DOE~~	~~K. Muenchow~~ 10/12/94	
QA	[signature]	10.12.94

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Rec'd by Doc. Ctrl. 12-13-94

DMR (continuation sheet)

Refer to 1-A01-PPG-001 for Processing Instructions.
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25. DMR No. 93-DMR-00234 9 1/20/94

2. or 3. Document Number/Revision	8. Document Title

8. Item	9. Page	10. Step	11. Proposed Modifications
			and sampling Using Hollow-Stem Auger Techniques mdw 12/8/94
			4. Lower 0.5-inch inner-diameter, factory slotted (0.10") PVC screen & PVC flush threaded casing into borehole. Advance well to total depth of borehole, or backfill bottom of borehole with pure gold bentonite pellets so that the desired interval is properly screened, or 16-40 mdw 9/20/94
			5. Place 10/20 silica sand filter pack to approximately 6-inches to 2-ft above the top of the screen.
			6. Place a minimum of 6 inches of pure gold pellets above filter pack to seal the well.
			7. Install a 12-inch diameter concrete pad at ground surface surrounding the mini-well.
			8. Install a four-foot long, steel post adjacent to the mini-well to act as a marker. Post should be installed such that 3-feet are above ground.
4	10		Change item # 8 to read; Install four-foot long steel post adjacent to....

12. Justification (Reason for Modification, HSG, TSR, etc.)

Required for Installation of mini wells in OU5 for groundwater investigation. SCOPE LIMITATION: OU-5

No training required

Refer to 1-A01-PPG-001 for Processing Instructions.
Print or Type All Information (Except Signatures)

1. Date 9/28/94	25. DMR. No. 94-DMR-002349	
2. Existing Document Number/Revision 5-21000-OPS-GT.6 Rev. 2	3. New Document Number or Document Number if it is to be changed with this Revision	
16. Originator's Supervisor (print/sign/date) Carol Bicher 10/3/94		
17. Assigned SME/Phone/Page/Location 9110/080	18. Cost Center 3120	19. Charge Number 98647900	20. Requested Completion Date	21. Effective Date 12-22-94
22. Accelerated Review? Yes ☐ No ☒	23. ORC Review Not Required 12/14/94	
24. Responsible Manager (print, sign, date) Ed Maast		

REVIEWED FOR CLASSIFICATION/UCNI
BY NA
DATE NA

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EG&G ROCKY FLATS PLANT	**Manual:**	**5-21000-OPS**
EMD MANUAL OPERATION SOP	**Procedure No.:**	**GT.6, Rev. 2**
	Page:	**1A of 18**
	Effective Date:	
Category 2	**Organization:**	**Environmental Management**

LIST OF FIGURES

LIST OF EFFECTIVE PAGES

Pages	Effective Date	Change Number	Status
1-5, 7-18	06/01/94	94-DMR-000801	
Form GT.6A	06/01/94	94-DMR-000801	
Form GT.6B	06/01/94	94-DMR-000801	
7	05/11/93	DCN 93.09	
9	09/23/93	DCN 93.06	
10	03/17/93	DCN 93.07	
13	02/10/93	DCN 93.04	
15	02/10/93	DCN 93.04	
15, 15C	02/10/93	DCN 93.05	
15, 15B, 15C	09/02/93	DCN 93.12	EXPIRED
15A	10/01/93	DCN 93.14	
15C	10/01/93	DCN 93.14	
15D-16	01/29/93	DCN 93.02	
15D-16A	/ / 94	94-DMR-0	

TOTAL NUMBER OF PAGES: 27 (including forms)

6.4 WELL POINT/MINI-WELL INSTALLATION

This Section describes the procedures used for installing well points. Before installation, sites will be located, numbered, and identified using stakes (or paint sticks on paved surfaces). Refer to SOP GT.10, Borehole Clearing, for more information regarding clearing the sites of underground obstructions.

6.4.1 Well Point Installation

After test sites have been located and cleared, an exclusion zone will be established according to the project Health and Safety Plan. The procedure for installing well points at a specific location is as follows:

1. Decontaminate the rig and downhole equipment. See SOP FO.3, General Equipment Decontamination for specific details regarding decontamination.

2. Set up the rig to obtain a thrust direction as close to vertical as possible.

3. Advance threaded expendable point by either hydraulically pushing or hammering to desired depth.

4. At locations within an IHSS, monitor the breathing zone near the rig for volatile organic compounds.

5. Insert the end of the hand-perforated tubing (Polyethylene or Teflon) with a threaded stud attached into the probe rods. Thread this into the expendable drive point. Length of perforated tubing will range between one and five feet based upon magnitude of anticipated water level fluctuations.

6. Hydraulically withdraw probe rods from hole.

7. Place 10/20 silica sand filter pack to approximately six inches above the top of the screen while keeping tension on the tubing. Place at least six inches of granular bentonite seal above filter pack.

8. Install four-inch long, one-inch diameter PVC casing with threaded or slip cap as protective well-point surface casing. Protective casing will be nearly flush with the ground surface.

9. Install four-foot long, ~~three-inch diameter~~ steel post adjacent to protective casing to act as marker and traffic barrier. Post should be installed such that three feet are above ground.

10. Develop well point with peristaltic or inertia pump. Since these well points are only for measuring water levels, it is not necessary to measure all the parameters referenced in SOP GW.4, Well Development.

11. Survey top protection casing because well-point tubing is too flexible. Refer to SOP GT.17, Land Surveying, for more information regarding site surveying procedures.

6.4.2. Mini-Well Installation

1. Decontaminate the rig and downhole equipment. See SOP FO.3, General Equipment Decontamination for specific details regarding decontamination.

2. Set up the rig to obtain a thrust direction as close to vertical as possible.

3. Advance a Kansas Sampler, hydraulically installing a 1-3/8-inch diameter borehole in accordance with SOP GT.2, Drilling and Sampling Using Hollow-Stem Auger Techniques.

4. Lower 0.5-inch inner-diameter, factory slotted (0.01) PVC screen and PVC flush threaded casing into borehole. Advance well to total depth of borehole, or backfill bottom of borehole with Pure Gold bentonite pellets so that the desired interval is properly screened.

5. Place 10/20 or 16-40 silica sand filter pack to approximately six-inches to two feet above the top of the screen.

6. Place a minimum of six inches of Pure Gold pellets above filter pack to seal the well.

7. Install a 12-inch diameter concrete pad at ground surface surrounding the mini-well.

8. Install a four-foot-long, steel post adjacent to the mini-well to act as a marker. Post should be installed such that three feet are above ground.

7.0 DOCUMENTATION

Provide the WIN form to the Geosciences Division as instructed in 5.1.1. Submit copies of applicable (Sections 5.1.6 and 8.0) records related to this administrative procedure to Geosciences Division.

The installation of monitoring wells and piezometers will be documented on groundwater monitoring well and piezometer report forms. Drilling information will be documented on the Rocky Flats Plant Borehole Log form (Form GT.1A) and on the Hollow-Stem Auger Drilling form (Form GT.2A), or on the Rotary/Core Drilling form (Form GT.4A). Besides the drilling and